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REPORT

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**SUBJECT** 

Germanium TransisteerDevelopment at VEB Werk fuer Bauelemente der Nachrichtentechnik, Teltow NO. OF PAGES

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THIS IS UNEVALUATED INFORMATION

- 1. Through application of the Bridgeman method for the making of pure germanium monocrystals, VEB Werk fuer Baulemente der Nachrichtentechnik, Carl von Ossietzky (formerly Dralowid), in Teltow, has succeeded in producing crystals with a degree of purity of 40 ohm centimeters. Samples of point-contact transistors made from these crystals during the development process have an putput amplification up to 1,000, with a voltage amplification amounting to several hindred. During October and November 1954, the Dralowid transistor development team under the 25X1 supervision of Dr. Mathias Falter, assisted by mathematician Palibabe (Inu) and physicist Blankenburg (fnu), succeeded in further improving the purity of the germanium monocrystals obtained through the application of the Bridgeman method. The maximum degree of purity reached as of mid-November 1954 was 55 ohm centimeters.
- 2. During the fall of 1954, the Dralowid plant started to build an install Ation for the application of the "zone melting procedure" (Zonenschmelzsveriahren) for the purification of germanium. However, the Dralowid in one important essential from this method. development team in one important essential from this method.
  The essential feature of this procedure consists of melting germanium monocrystals gradually; the monocrystals are not contained in 25X1 crucibles during the process, the walls of the crucible into the germanium. The Dralovid plant however, used a quartz container called a Schiffchen, of an oblong tube (i.e. a tube halved along its longitudinal axis). The germanium was put into this half tube and the Schiffchen with its germanium contents was placed in a larger quartz tube. This quartz 25X1 tube was surrounded by induction coils of two windings each; the coils were at intervals of 10 centimeters from each other. There were four or five coils. The couls were heated by a transmitter and the quartz tube with the Schiffs en inside it was moved horizontally at a slow speed within the collection this way, the germanium was melted and 25X1 purified. It that the purified germanium still contained too many silicon impurities ( ) from the quartz, because the sigicon impurity ratio (the number of impurities in crystallized germanium still contained to many silicon impurity ratio (the number of impurities in crystallized germanium still contained signored impurity ratio (the number of impurities in crystallized germanium still contained signored impurity ratio (the number of impurities in crystallized germanium still contained signored impurity ratio (the number of impurities in crystallized germanium still contained signored impurity ratio (the number of impurities in crystallized germanium still contained signored impurities in crystallized germanium still contained signored impurities ( ) signored impurit mium in relation to their number in molten germanium), is greater than 1. As soon as this mistake was realized, the Dralowid team decided to apply the Zone melting procedure in its original version. In this version,

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25X1

the germanium as moved through melting zones without being put into a being exposed to container impurities. This zone melting procedure, however, had not transmitter for the induction heating r 1954 and was undergoing repairs.

- The Dralowid team the also completed an installation for the application of the Czrochalsky method for the purification of germanium. The first results obtained were germanium monocrystals of 10 centimeter length with a diameter of 5 millimeters. here crystals, however, did not have straight shapes but were rather uneven in the degree of purity of the best samples obtained through the application of the Bridgeman method. The experiments with the Czrochalsky installation were to be continued as soon as the transmitter for induction heating (a 3.5 kw Lorenz Gluehaender) was repaired. It is hoped that through improvement of the present Czrochalsky installation more homogenous crystall can be obtained than through application of the Bridgeman method. The highest purity obtained with the Bridgeman method is in the found well inside the germatium crystall whereas its outer layers have varying degrees of inpurity.
- 4. Production of point-contact germ early 1955. The Dralowid plant State Planning Commission that table.
- 5. No essential progress had been made as yet by Falter's team in the development of junction-type germanium transistors. The plan for this development provided that it should be completed by the end of 1955.

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